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Inv: KENZOU KASSAI et al.**Seat for baby carriage**

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Inventor(s): KASSAI KENZOU (JP)  
Applicant(s): APRICA KASSAI KK (JP)  
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**Abstract**

According to a seat for a baby carriage disclosed herein, buttocks of a baby are prevented from being sunk into a seat portion when a plate-type core member which is charged in this seat portion is divided into a plurality of plate-type members by at least one horizontally extending parting line for allowing collapse of the baby carriage along the direction of its width, so that the baby is released from muscular strain. Adjacent ones of a plurality of plate-type members (9 to 11) are hinged with each other by hinge tapes (12, 13) on lower surface sides thereof. When the plate-type members (9 to 11) define a uniform plane, end surfaces thereof are butted against each other.

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**Description****BACKGROUND OF THE INVENTION****Field of the Invention**

The present invention relates to a seat which is mounted on a widthwise collapsible baby carriage, and more particularly, it relates to an improvement of a core member which is charged in its seat portion.

**Description of the Background Art**

A seat of a collapsible baby carriage is generally formed independently of the body of the baby carriage. The seat, which comprises a seat portion and a backrest portion, is made of a flexible sheet material as a whole, and so mounted on the body of the baby carriage that its shape is retained. Principal parts of the seat portion and the backrest portion are charged with a plate type core member which is made of a relatively rigid material.

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This core member is so shaped and arranged as not to prevent the operation of collapsing the baby carriage. In a baby carriage which is collapsed widthwise, for example, the core member charged in the seat portion is formed by a plurality of plate-type members which are divided by at least one parting line horizontally extending along the baby carriage. Thus, the seat portion can be bent along the portion(s) between adjacent ones of the plurality of plate-type members, thereby allowing collapse of the baby carriage along the direction of its width.

While the core member which is divided into a plurality of plate-type members as hereinabove described allows collapse of the baby carriage along the direction of its width, however, the seat portion may disadvantageously be bent along the portion(s) between the plurality of plate-type members also in an open state of the baby carriage, to sink the buttocks of a baby who is sat thereon. In order to prevent such a state to the utmost, some baby carriages employ such a design that a rigid link extending widthwise is in contact with the lower surface of the seat portion. Due to the structure of the baby carriage, however, it is difficult to provide such a rigid link with a relatively wide area. Thus, a region of the seat portion which is supported by the rigid link is extremely limited, and hence the buttocks of the baby are still sunk into the seat portion in a region not supported by the rigid link.

On the other hand, a baby carriage which is not collapsed widthwise causes substantially no problem of the aforementioned sinking since its seat portion can be charged with an integral core member defining a uniform plane. Thus, the baby carriage which is collapse widthwise is inferior in comfortableness to that which is not collapsed widthwise, due to the aforementioned sinking in the seat portion.

## SUMMARY OF THE INVENTION

Accordingly, an object of the present invention is to prevent the aforementioned problem of sinking in a seat mounted on a baby carriage which is collapsed widthwise.

As hereinabove described, the present invention is directed to a seat mounted on a baby carriage which is collapsed widthwise. This seat comprises a seat portion and a backrest portion, so that the seat portion is charged with a plate-type core member which is made of a relatively rigid material. This core member comprises a plurality of plate-type members which are divided by at least one parting line horizontally extending along the baby carriage. In such a seat for a baby carriage, adjacent ones of the plurality of plate-type members are hinged with each other on lower surface sides thereof respectively, while these plate-type members have end surfaces which are butted against each other between the adjacent ones when the same define a uniform plane.

The plurality of plate-type members forming the core member, which are hinged with each other, allow collapse of the baby carriage along the direction of its width.

When the baby carriage is open, on the other hand, hinge portions for the plurality of plate-type members are positioned on the lower surfaces of the plate-type members so that the end surfaces are butted against each other between the adjacent ones of the plate-type members when the plurality of plate-type members define a uniform plane. Thus, the core member can maintain the uniform plane also when the weight of the baby is applied to the core member from above.

According to the present invention, therefore, it is possible to prevent the buttocks of the baby from being sunk into the seat portion. Thus, the weight of the baby can be dispersed along a relatively wide area on the seat portion.

It has been recognized that the femoral muscles of the baby are relatively strained when the buttocks are sunk into the seat portion. According to the present invention, such sinking can be so prevented that the femoral muscles can be released from strain. Thus, the seat according to the present invention will not fatigue the baby who is sat thereon for a relatively long time.

The foregoing and other objects, features, aspects and advantages of the present invention will become more apparent from the following detailed description of the present invention when taken in conjunction with the accompanying drawings.

## BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a perspective view showing a baby carriage 2, comprising a seat 1 according to an embodiment of the present invention, which is in an open state;  
 Fig. 2 is a perspective view showing the baby carriage 2 in a closed state;  
 Fig. 3 is a cross-sectional view of a seat portion 3 shown in Fig. 1;  
 Fig. 4 is a plan view of the seat portion 3 shown in Fig. 1;  
 Fig. 5 is a cross-sectional view corresponding to Fig. 3, showing the seat portion 3 in a state which is attained in the closed state of the baby carriage 2;  
 Fig. 6 is a cross-sectional view independently showing a core member 6 which is in the state shown in Fig. 3;  
 Fig. 7 is a cross-sectional view corresponding to Fig. 6, showing the core member 6 which is in the state shown in Fig. 5; and  
 Figs. 8A and 8B are electromyograms which were measured in a state sitting babies on the seat 1 according to the embodiment of the present invention and a seat comprising a core member consisting of a plurality of unhinged plate type members respectively.

## DESCRIPTION OF THE PREFERRED EMBODIMENTS

Fig. 1 is a perspective view showing a baby carriage 2, which comprises a seat 1 according to an embodiment of the present invention, in an open state, and Fig. 2 is a perspective view showing the baby carriage 2 in a closed state. As clearly shown in Fig. 1, the seat 1 comprises a seat portion 3 and a backrest portion 4. Both edges of the backrest portion 4 are mounted on a push rod 5. As shown in Fig. 2, the seat 1 is so deformable as to allow an operation of collapsing the body of the baby carriage 2 along the direction of its width.

Figs. 3 and 4 are a cross-sectional view and a plan view showing the seat portion 3 respectively. Fig. 5 is a cross-sectional view corresponding to Fig. 3, showing the baby carriage 2 in a collapsed state.

A plate-type core member 6 which is made of a relatively rigid material is charged in the seat portion 3. Further, a cushion member 7 is arranged to cover an upper surface of the plate-type core member 6. The core member 6 and the cushion member 7 are covered with a flexible facing sheet 8. This facing sheet 8 integrally extends from the seat portion 3 to the backrest portion 4.

The core member 6 comprises three plate-type members 9, 10 and 11 which are divided by two parting lines horizontally extending along the baby carriage 2. The plate-type members 9 to 11 are formed by plate members which are made of plastic, for example, and preferably formed by corrugated plastic boards, in order to reduce the weight of the baby carriage 2.

Figs. 6 and 7 independently illustrate the core member 6 comprising the plate-type members 9 to 11. Adjacent ones of the plate-type members 9 to 11 are hinged with each other on lower surface sides thereof. Hinge tapes 12 and 13 which are made of a repeatedly bendable flexible sheet material, for example, are employed for such hinging, so that these hinge tapes 12 and 13 are pasted to the lower surfaces of the plate-type members 9 to 11 respectively.

When the plate-type members 9 to 11 define a uniform plane, the adjacent pair of plate-type members 9 and 10 have end surfaces 14 and 15 which are butted against each other, while the other adjacent pair of plate-type members 10 and 11 also have end surfaces 16 and 17 which are butted against each other respectively. Thus, the core member 6 is foldable as shown in Figs. 5 and 7, while the same is not foldable in directions opposite to those shown in Figs. 5 and 7 from the state defining a uniform plane shown in Figs. 3 and 6. Thus, the core member 6 maintains the plane state also when downward force is applied to the central plate-type member 10, for example.

The body of the baby carriage 2 comprises a horizontal pair of side bars 18 and 19 which are positioned on a lower surface side of the seat portion 3, and a connecting bar 20 connecting these side bars 18 and 19 with each other so that the space therebetween is changeable. As shown in Figs. 3 and 5, the connecting bar 20 can take two states including a linear state and an upwardly bent state. The space between the pair of side bars 18 and 19 is changed by the operation of collapsing the baby carriage 2 along the direction of its width.

A belt 21 is wound on a longitudinal central portion of the aforementioned connecting bar 20, and mounted on the lower surface of the seat portion 3. Another belt 22 is extended to connect the pair of

side bars 18 and 19 with each other, and a longitudinal central portion of this belt 22 is also mounted on the lower surface of the seat portion 3. The seat portion 3 is mounted on the pair of side bars 18 and 19 and the connecting bar 20 by these belts 21 and 22, to follow operations of the side bars 18 and 19 and the connecting bar 20.

In the open state of the baby carriage 2 shown in Fig. 1, the seat portion 3 defines a uniform plane on the side bars 18 and 19 and the connecting bar 20 as shown in Figs. 3, 4 and 6, and this state is maintained by the core member 6. When the baby carriage 2 is closed as shown in Fig. 2, on the other hand, the core member 6 is upwardly bent as shown in Figs. 5 and 7.

Figs. 8A and 8B are electromyograms which were measured for confirming the effect of the present invention. These electromyograms were measured by sitting babies on seats of baby carriages in practice while attaching electrodes onto their thighs at intervals of 2 cm. Fig. 8A shows the case of the seat 1 according to the embodiment of the present invention, and Fig. 8B shows the case of a comparative seat comprising unhinged plate-type members 9 to 11.

The electromyogram shown in Fig. 8A exhibits transition at low levels substantially with no fluctuation. A peak A, for example, was obtained when the baby moved its legs. On the other hand, the electromyogram shown in Fig. 8B exhibits extreme fluctuation at relatively high levels. The regular fluctuation B, for example, shows muscular strain. Further, depression C shows temporary relaxation of the muscular strain. In addition, irregular and extreme fluctuation D in the rear half of the electromyogram shows muscular fatigue.

Comparing the electromyograms shown in Figs. 8A and 8B with each other, it is understood possible to sit a baby on the seat 1 according to the present invention in a state releasing its thighs from strain, thereby providing a comfortable state for the baby. This is because the buttocks of the baby are not sunk into the seat portion 3 receiving its weight and concentration of the weight to a specific portion is prevented since the core member 6 maintains a plane state.

While the structure of the backrest portion 4 has not been clarified in the above description of the embodiment, a structure which is similar to that of the seat portion 3 may be employed for the backrest portion 4.

While the core member 6 is divided to be provided with the three plate-type members 9 to 11 in the aforementioned embodiment, the same may alternatively be divided into two or at least four portions, in response to the structure of the baby carriage.

While the flexible hinge tapes 12 and 13 are employed for hinging the plurality of plate-type members 9 to 11 with each other in the aforementioned embodiment, parts of the core member 6 along its thickness may alternatively be employed as hinge portions, or hinge members comprising pivot shafts may be employed, for example.

Although the present invention has been described and illustrated in detail, it is clearly understood that the same is by way of illustration and example only and is not to be taken by way of limitation, the spirit and scope of the present invention being limited only by the terms of the appended claims.

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## Claims

1. A seat being mounted on a baby carriage being collapsed widthwise, said seat comprising: a seat portion (3) and a backrest portion (4), said seat portion being charged with a plate-type core member (6) being made of a relatively rigid material, said core member comprising a plurality of plate-type members (9, 10, 11) being divided by at least one parting line horizontally extending along said baby carriage, adjacent ones of said plurality of plate-type members being hinged with each other on lower surface sides thereof, and having end surfaces (14, 15, 16, 17) being butted against each other upon defining of a uniform plane.

2. The seat for a baby carriage in accordance with claim 1, further comprising a hinge tape (12, 13) of a flexible sheet material being pasted to a lower surface of a boundary between said adjacent ones of said plate-type members.

3. The seat for a baby carriage in accordance with claim 1, wherein said plurality of plate-type members consist of a central plate-type member (10) being positioned at the center along the width of said baby carriage, and side plate-type members (9, 11) being connected to both side portions of said central plate-type member.

4. The seat for a baby carriage in accordance with claim 1, wherein said seat for a baby carriage is supported from below by a pair of side bars (18, 19) being positioned on a lower surface side of said seat portion (3) at a space along the direction of the width, and a connecting bar (20) connecting said pair of side bars with each other, said connecting bar being capable of taking two states including a linear state and an upwardly bent state.

5. The seat for a baby carriage in accordance with claim 4, wherein said connecting bar comprises a central connecting member being positioned at the center along the width of said baby carriage for maintaining a horizontal state, and a pair of side connecting members having first ends being rotatably connected to said central connecting member and second ends being rotatably connected to said side bars respectively, said plurality of plate-type members consisting of a central plate-type member (10) being positioned at the center along the width of said baby carriage, and side plate-type members (9, 11) being connected to both side portions of said central plate-type member.

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